

Course Name: Computer Architecture

Course Structure: Lectures: 2(1.5 hrs)

Credit Hours: 3

Prerequisites: Digital Logic and Design

Objectives: Get a deeper understanding of how computers work, working knowledge of various subsystems and the general principles that affect their performance, analyze the performance of systems and quantify the performance measurements, fundamentals of all technologies, and advanced architectural features that boost the performance of computers.

Course Contents: Fundamentals of Computer Design including performance measurements & quantitative principles, principles of Instruction Set Design, Operands, addressing modes and encoding, pipelining of Processors: Issues and Hurdles, exception handling features, Instruction-Level Parallelism and Dynamic handling of Exceptions, Memory Hierarchy Design, Cache Design, Performance Issues and improvements, Main Memory Performance Issues, Storage Systems, Multiprocessors and Thread Level Parallelism. Case Studies.

Resources:

1. *Computer Architecture: A Quantitative Approach* by Hennessy & Patterson, Morgan & Kauffman Series (2006) Fourth Edition.
2. *Computer Organization & Design : The Hardware/Software Interface* By Patterson & Hennessy, Morgan & Kauffman Series (2008) Fourth Edition.